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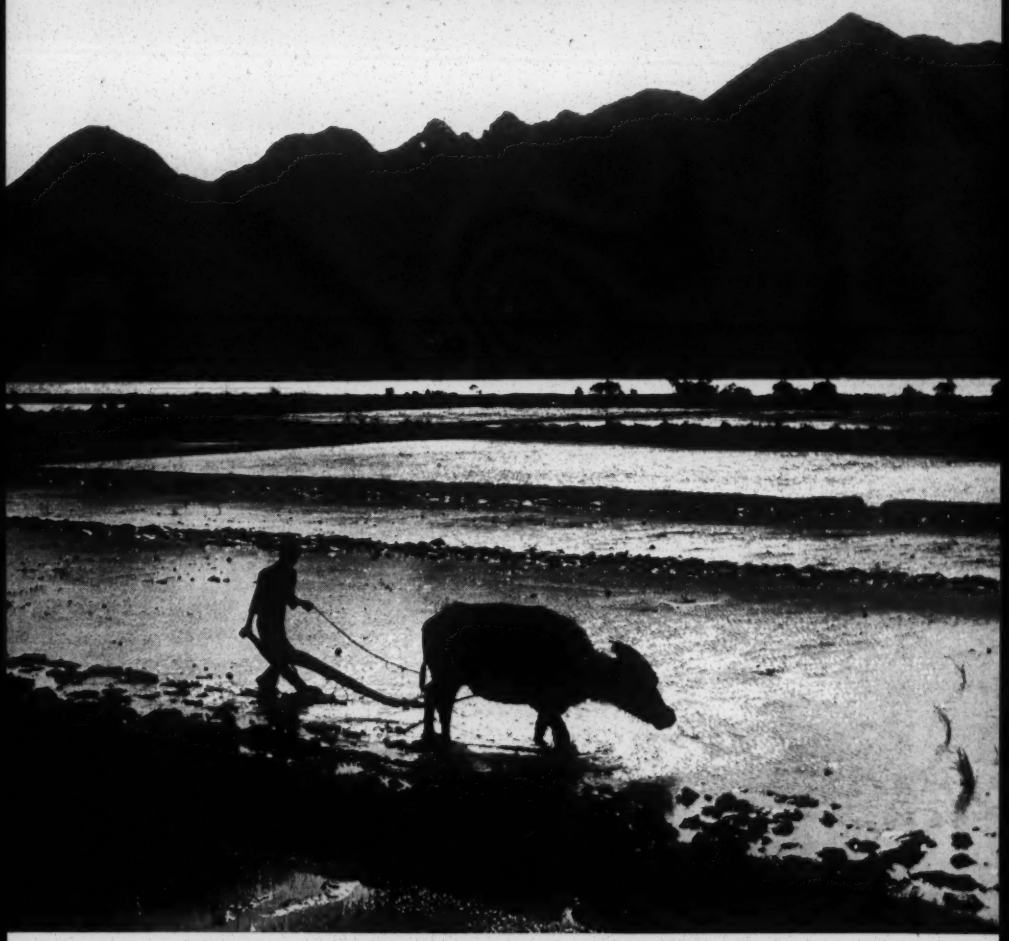

HORACE BRISTOL

Behind his water buffalo, a southern Formosan cultivates a new rice crop to feed his crowded island

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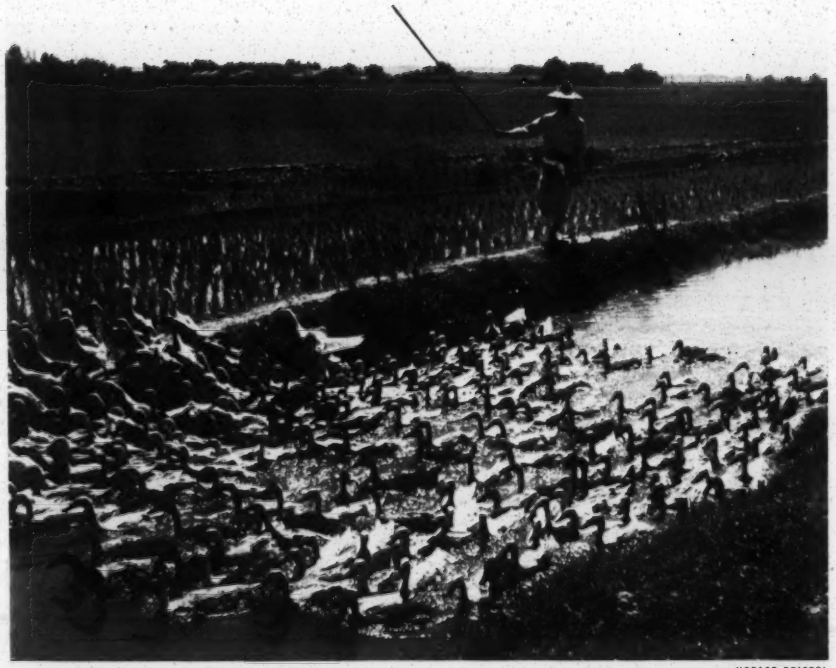


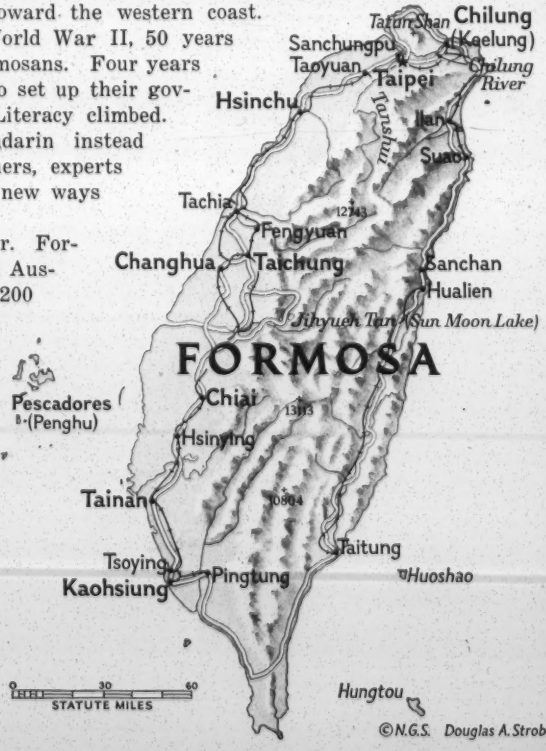
HORACE BRISTOL

DUCKLINGS STAMPEDE along a central Formosa irrigation channel. Beside them grows the rice that often joins them on a platter. Ducks add precious meat to Formosan diet

to a sloping plain, shelving toward the western coast.

In 1945, with the end of World War II, 50 years of Japanese rule ended for Formosans. Four years later the Nationalists arrived to set up their government. Schools sprouted. Literacy climbed. Youngsters were taught Mandarin instead of Japanese. Engineers, planners, experts swarmed into the land adding new ways to the old.

The changes are far from over. Formosa's population is larger than Australia's—a country more than 200 times as big. Only about a quarter of the land is arable. Somehow it must produce food for some 10,000,000 mouths. It does so by cultivating every possible strip of soil including the turf that lines city pavements and the ribbons of dirt that separate railroad tracks. Towering fertilizer plants like the one in the sketch, above, produce many chemicals that were once imported to nourish the long-used soil. Rivers barely trickle by the time they reach the sea. Most water



U. S. ARMY

Formosa, Island Sentinel

THESE young jet pilots aren't just playing games. For them, every training flight serves also as a patrol. Live ammunition primes the guns of their sleek, American-built fighters. Trouble is only fifteen minutes away.

That's about as long as it would take a communist bomber from the Chinese mainland to reach the island of Formosa where these men of the Free China Air Force are on constant alert. Formosa is a link in American defense. Its strength helps safeguard the free world.

The leaf-shaped island, less than 100 miles off China's coast, means many other things. To some 2,000,000 anti-communist refugees who followed General Chiang Kai-shek here from the mainland in 1949, Formosa is a safe retreat and perhaps a springboard for their eventual return. To the 8,000,000 or so who lived here before 1949, Formosa is an ancestral home—strangely crowded and renovated in recent years.

Larger than Maryland, Formosa lies across the Tropic of Cancer. South of the line, tropical fruits bloom in intense heat. North of it, temperatures are more moderate. Misty mountains rise like a spinal column along the length of the land. On the eastern Pacific shore they drop abruptly to the ocean in near-vertical cliffs. But facing Asia, the hills dwindle

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HORACE BRISTOL

the length of the island, feeding industry, pouring into a cracking plant to become jet fuel. Yet goats and water buffalo are often tethered to the lifeline. Trains bring produce into Taipei, below, but coolies are apt to unload it with carrying poles.

So diverse are the jobs available to Formosans that even in crowded Taipei, the capital, the Chinese do not consider any of close to a million citizens unemployed. All can find some sort of work, even if it's only buying movie tickets at cut rate in the mornings and selling them again at higher evening prices. But city housing is poor; imported goods, prominently displayed in stores, are expensive. Here, perhaps more than in the fertile, scrupulously cultivated countryside, it becomes evident that Formosa's economy is entirely dependent on United States aid. Without it, the new factories, the fertilizer plants, the hydroelectric power stations would not have risen from the drawing boards. Abject poverty would rule the city streets.

What does the United States gain? Look again at the top picture on page 254 for the answer. Chiang Kai-shek's ships and planes and 600,000-man army turn Formosa into a bristling Asian sentinel standing guard outside the ports of communist China.—E. P.

HORACE BRISTOL

has already meandered off to irrigate fields or lies stored behind new dams.

The word Formosa is Portuguese for "Beautiful." The Chinese name is just as apt. They call it Taiwan—"Terraced Bay." No impression of the island would be complete without a view of the curving terraces that climb every foothill like the seats of a giant stadium. Fed by rain and mountain brooks, these flat, man-made shelves of earth glisten with water. Stooped figures carefully set rice plants in the flooded mud, or tamp the walls of miniature dikes to stop seepage into lower levels. Add these terraces to vegetable gardens, rice paddies, cane fields, and tea plantations, and you get a total of about 745,000 farms. Average size—three acres. This intensive agriculture engrosses half the popula-

U. S. NAVY

AMERICAN SAILORS meet Chinese midshipmen on a southern Formosa basketball court

tion. They not only raise enough food to provide what Asians consider a "good" diet, with a morsel of meat every day for every family, but have enough left over to export sugar, rice, and some tea and bananas. Formosa's small farmers often manage to get three, sometimes four, crops a year from their little holdings. The annual rice crop is about 1,800,000 tons, while sugar comes to just under a million tons a year.

Modern trucks may wheel such produce to market or warehouse. But the water buffalo (see cover) remains the Formosan tractor. Modern dams help store the water for irrigation, but foot-power pumps often spill it onto the terraces through bamboo pipes. Cane cutters, below, wear traditional peaked hats.

In industry, too, new ideas and techniques have come to Formosa, yet have not displaced old ways. New factories make textiles, glass, refine oil. But in city streets, dingy shops turn out handmade matches. An oil pipe line ranges

Chaos seems complete at a rookery. But each bull, looming above smaller seals, belligerently keeps his noisy harem in order. Bachelors escape to a distant beach

One Seal's Family

GRAND old man of the fur seal family, Dad owns a commanding voice. He needs it to keep order in his harem—which may add up to 100 wives. Huge and battle-wise, Dad, right, wins all his mates by mauling and dragging them, one by one, to his reservation, a domain fenced by invisible lines. If another bull seal wants to steal one of Dad's cows, below, he's got a fight on his flippers.

So goes life in the Pribilofs, four American-owned islands some 300 miles off Alaska, where seals, not humans, reign. Winter drives cows and pups as far south as Mexico. Bulls tend to stay home, waiting for summer, staking out their domains.

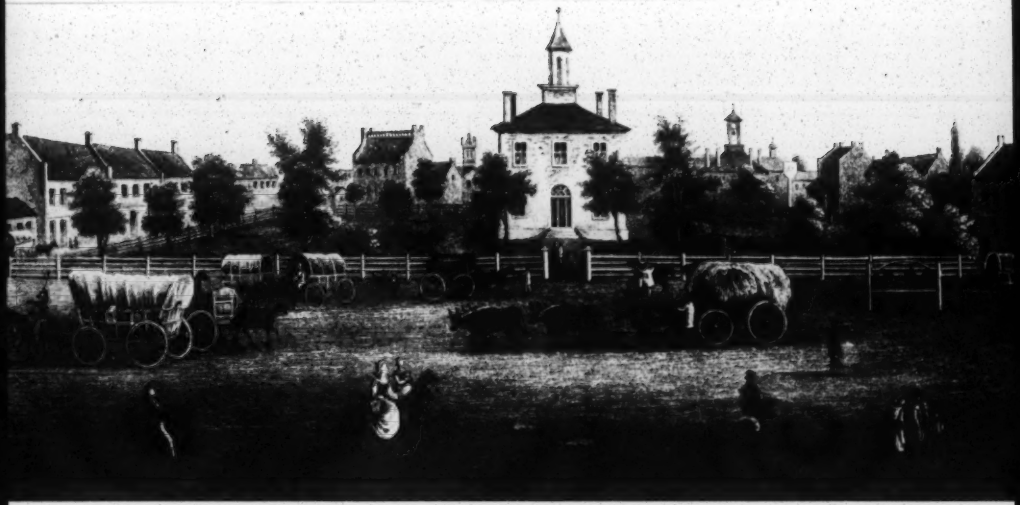
PHOTOGRAPHS BY V. B. SCHEFFER, FISH AND WILDLIFE SERVICE

HUNTERS almost wiped out Pribilof seals before international conservation saved them. Now some 60,000 bachelor seals can be harvested yearly without harm. Their fur earns as much as $5,000,000.

In late June and early July, silver-brown cows return home, wallowing through the surf. Dad and his colleagues browbeat their favorites home. Shortly, pups are born—offspring of last year's mates.

Junior, right, is coal black, weighs from eight to 12 pounds, and gorges a gallon of milk at one meal. He may miss next mealtime when Mom is off fishing. If Junior is orphaned, he'll starve. No cow seal adopts another's pup. But mothers can find their own young unerringly, singling it out of thousands.

It's not a bad life for cows and pups. But Dad must keep constant guard, losing sleep, not eating properly. When summer ends, he's nervous, rib-lean, scarred, and bone-weary. No wonder Dad doesn't go south. He needs a rest.—S.H.



SANTA FE RAILWAY

COURTHOUSE at Independence, Missouri, saw wagon trains hit the trail a century ago

creaked west to Council Grove, Kansas, then soon picked up the Arkansas River and tracked it across billowing prairie. Once, by the river, pistol fire exterminated hundreds of coiled vipers in a rattlesnake den. Frequently, horizon-filling herds of buffalo would shoulder past wagon trains, stampeding horses.

Indians alternated between "hair-lifting" menaces, and almost unshooable nuisances. At any hour, hundreds might appear, ambling like mendicants in family groups behind the train, stealing anything unwatched—once a load of lead weighing nearly 100 pounds. Others often attacked with murderous screeches. But many were cowardly. Pioneers straying in small groups sometimes stood off savages merely by aiming rifles at them until help arrived. They knew that to fire would invite a charge before the weapons could be reloaded.

But fear of Indians led all to dread standing watch—and all stood it except the very sick. Paid substitutes weren't allowed. In the prairie blackness, the murmurings of grass or sounds like wind might mean attack. The snap of a twig might as easily bring a cry of "Indians," and rouse sleepers to their feet.

NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS

Railroad and highway still use Santa Fe Trail's Raton Pass

UMI

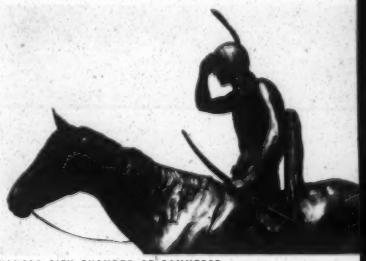
SANTA FE RAILWAY

Santa Fe Trail

Part two of a series; watch for special map of westward trails next week

SANTA FE! The name shimmered like the gold of each day's setting sun. Riders, walkers, and rumple-topped wagons toiled westerly toward the old Spanish town—3,000 wagons and 50,000 yoke of oxen in one season alone. Outriders might look back on wagons eight abreast and squint sun-seared eyes down a mile-long line of them. No wonder their ruts still dent the prairie in places—shadows in the grass saying mutely, "Here lies the Santa Fe Trail."

In the early 1800's, intrepid plainsmen and traders who had braved sun, storms, and Indians told tales of the Spanish lands of the Southwest. Commercial ears pricked up in St. Louis, frontier fur-trading town. All over young America people were eager for riches, hair-triggered for adventure. As always, new land was a lure. Enough of it lay beyond the Mississippi to make 20 future states.



KANSAS CITY CHAMBER OF COMMERCE

So the wagons began to roll, flanked by the land-hungry, the wealth seekers, the adventurers, even a few invalids looking for new health in the prairie air. Small boys got the bug. "I will pay 1¢ for the return of the apprentice Kit Carson, who ran away from my harness shop in Franklin, Missouri. . . . He is 16, small for his age . . ." read a newspaper notice in 1826. Small he may have been, but the future he was already carving on the Santa Fe Trail would be huge.

Franklin was the Trail's original starting point. Later, Independence, Missouri, below, was the final look at civilization for the emigrants. The wagons

WILLIAM BUDD

Basel, Switzerland's Port

SWISS NATIONAL TOURIST OFFICE

LONG, low barges clutter the port. Cargo nets swing into their holds. Dockside cranes squeal and grind beyond sweating, shouting men.

You wouldn't connect this scene with landlocked Switzerland. But you can see it every day at Basel, Swiss port on the Rhine River. Though 500 miles from the sea, Basel handles some 4,000,000 tons of cargo a year—about 40 percent of Swiss imports and 55 percent of the nation's exports.

Back from the water front, Basel looks more the way it should. Spalen Gate (left) marks the site of walls that once ringed the city. It reminds visitors that for 20 centuries the town has straddled the Rhine. Basel marks its 2,000th birthday this year.

Number 8 in "Cities of the World" Series

RICHARD H. STEWART, NATIONAL GEOGRAPHIC STAFF; FROM "COMMERCE OF THE PRAIRIES"

TRAIL'S END—Cheers and gunshots greeted the first view of Santa Fe's adobe roofs

Pawnee Rock, near the present Kansas town of that name, was the most feared place on the Trail. Crouched there, Indians could see for miles over the Ash, Walnut, and Arkansas valleys, and lay an ambush. One night on watch, Kit Carson mistook his mule for an Indian, and killed it.

Desolation descended. No white man's dwelling relieved the sea of prairie grass. Faces turned leathery from sun, then smarted under torrential rains. Often, thunder blasted like artillery, and lightning struck down oxen in their traces. "These great steppes seem only fitted for the haunts of the mustang, buffalo, antelope, and their migratory lord, the Indian; they are too isolated [for] civilized man," said Josiah Gregg in *Commerce of the Prairies.*

At Cimarron Crossing, west of Fort Dodge, two routes were offered. One plunged west into Colorado until sky-high peaks loomed in the blue distance, blocking the path. Veering southward, the Trail angled close to the Sangre de Cristo mountains, as though searching for a way through the barrier. It found one at Raton Pass where "Uncle Dick" Wooten built a toll road and grew rich from the wagon trains that groaned over it.

Beyond Raton, the Spanish lands spread out in welcome. Drivers fixed their eyes on square-topped Wagon Mound Butte, clear in the distance, and steered a straight course for it across sage-flecked, arid plain. Mountains diminished in size as the Trail gained gradual elevation beside them. Soon there were sights of adobe pueblos and mission churches and the end was near.

The other branch, the Cimarron Cut Off, was shorter, but more dangerous. It passed down the Cimarron Desert, nicking what is now the panhandle of Oklahoma. In that dryness, men had to dig deep for water. And if rain fell, the animals would often grow frenzied with the smell and like as not bolt away.

But the end came for the stubborn, tough trail veterans. Generally they would halt before reaching town—to clean up and get ready for high jinks and business deals. Then the dusty, battered wagons would swing through the adobe-lined streets while shouts rang across the old plazas, "Los americanos! La caravana!"

The words didn't mean much to the newcomers. They'd wink at each other and think, quietly, "We made it."—S. H. *Next Week: The Oregon Trail*

Young Ideas Keep Basel From Feeling Its 2,000 Years

Ocean ships cannot navigate this far upstream. But barges and river vessels over 250 feet long shuttle cargoes and even passengers between Switzerland and down-river seaports. Basel's position, in a nation that must trade to survive, makes it second only to Zurich as a Swiss economic center.

Raw cotton, for example, churns upstream to Basel after shipment from the United States. In Switzerland it may become "dotted swiss" textile. Back it goes, through Basel, on the way to garment factories and shops in the United States.

Besides funneling goods in and out of Switzerland, Basel supports its own industries, mostly in chemicals and pharmaceuticals.

The river port is the scene of the Swiss Industries Fair, an annual display of Swiss products. Last year, the fair drew more than 30,000 visitors from 30 European and 56 overseas countries. This year's fair, starting next month, will show the wares of about 2,300 exhibitors. Some 160 of them will represent the watchmaking industry. Others will display such crafts and trades as leatherwork, furniture making, textiles, papermaking and printing, art work, and many others. To help greet its guests, the city will open the doors of a spanking new hotel built for Basel's 2,000th birthday celebration next summer.

NATIONAL GEOGRAPHIC PHOTOGRAPHER WILLARD R. CULVER

Romans founded the city and called it Basilia, "city by the water." During its long life it was sacked in 917 A.D. by Hungarian raiders and twice devastated by fire. Always it grew back, stronger than before. Its university, Switzerland's oldest, dates from 1460. Erasmus once taught there. So did a more recent philosopher, Nietzsche. The great artist, Hans Holbein the Younger, lived in Basel. The Art Museum houses Europe's finest collection of Holbein paintings.

Basel's cathedral, nearly a thousand years old, dominates the city. Its two spires overlook the Rhine, gazing down on green waters furrowed by shipping. In contrast to this Gothic edifice, the sweeping modern lines of St. Anthony's Church tower above Basel's streets.

Basel ranks as an important railway terminal and banking center. Population —more than 210,000. Hard-working, modern-minded people, they throng the streets, parking their bicycles in specially designed racks (above).—E. P.